INTRODUCTION

INTRODUCTION TO COMPUTER:-

Computer is an electronic device, which is used for varied applications ranging from performing complex calculations, writing simple letters, developing multimedia applications, financial accounting & banking applications, booking of Airlines/Railways tickets and scores of many other fields.

A Computer has many components like Keyboard, Mouse, Monitor, Memory, Printer and most important the Central Processing Unit which serves as the brain of the computer system on the whole.

Computers work when Instructions in a particular language are given to it to perform a task.

A program comprises of many such instructions clubbed together.

Hardware refers to the Physical Components of the Computer that you can see and touch like Keyboard, Mouse, Printer, Hard disk and so on.

Software consists of Instructions, Programs, Operating Systems which are required to run the necessary pieces of hardware together. Without software, the hardware is of no use.

WHAT'S COMPUTER

Computer

A computer is an electronic data processing device which can read and write, compute and compare, store and process large volume of data with high speed, accuracy and reliability. A computer has several components like Keyboard, Mouse, Processor, Memory, Monitor etc.

The basic Organization of a computer includes the following:

1. Input Unit: The data is entered using an input device such as a Keyboard or a Mouse.
2. Processing Unit: The computer processes the data according to a set of instructions called Program.
3. Output: The computer returns the processed information in the form of output that can either be printed or displayed on the output devices like Printer or Monitor.
4. Memory: The computer saves the data and the instructions in the memory for further retrieval.

HISTORY OF THE COMJPUTER

One of the most important developments leading to the personal computer revolution was the invention of the semiconductor or transistor in 1948. This feat was accomplished by John Bardeen, Walter Brattain, and William Shockley, who were engineers working at Bell Laboratories. The transistor, nothing more than a solid-state electronic switch, replaced the much larger vacuum tube and consumed significantly less power in performing the tube's job. Thus a computer system built with transistor was much smaller and more efficient.

In 1959, engineers at Texas Instruments figured out how to put more than one transistor on the same base or substrate material and connect the transistors without wires. Thus the integrated circuit, or IC, was born. The first IC contained only six transistors, but the Intel 80386 in many of today's systems has 280,000 transistors. ICs can be built with millions of transistors on-board.

The world's first microprocessor was the Intel 4004, a 4-bit microprocessor, introduced in 1971. The successor to the 4004 chip was the 8008 8-bit microprocessor in 1972. In 1973, some of the first microcomputer kits based on the 8008 chip were developed. These kits were little more than demonstration tools and could not do much except blink lights. In late 1973, Intel introduced the 8080 microprocessor, which was 10 times faster than the earlier 8008 chip and also could address a whopping 64KB of memory. This breakthrough was the one the personal computer was waiting for.

IBM introduced its first "personal computer" in 1975. The Model 5100 had 16KB of memory and a built-in BASIC language interpreter.

COMPUTER GENERATIONS

First Generation (1942-55)

- Used vacuum tubes.
- Speed in Millie-seconds
- Very large size.
- Consumed lot of power
- Generated tremendous heat
- Poor reliability due to vacuum tubes
- Used only machine language and assembly language

Second Generation (1955-64)

- Used transistors
- Speed in micro-seconds
- Relatively small size
- Consumed considerably less power
- Generated lesser heat as vacuum tubes were not used
- Better reliability than first generation computers
- Used magnetic core as a storage device
- Used assembly language and high level languages (FORTRAN, COBOL etc.)

Third Generation (1965-74)

- Used integrated circuits
- Speed in nano-seconds
- Further reduced size
- Reduced power consumption and higher reliability due to the use of integrated circuits
- Generated lesser heat
- Used concept of cache memories
- Time-sharing and on-line computation possible
- Used improved high level languages

Fourth Generation (1975 onwards)

- Using large scale integration - higher density chips
- Speed in nano-seconds
- Introduction of microcomputers and microprocessors

Fifth Generation (currently going on)

- Research is being done in Japan, USA and other countries.
- Ability to communicate with spoken words.
- Graphic and image recognition
- Emulation of human sense organs of speech, sight and sound
- Ability to find solutions of problems using databases and information already stored in computer
  memory.
- Ability to take away the burden of programming from human beings (i.e. computers to program
  themselves).

1. Speed:-

The computer is very high speed electronic device. It can perform millions of operations on the data in one second. The speed is usually measured in Mega Hertz (MHz) or Giga Hertz (GHz)..

2. Accuracy:-

In addition to being very fast, computer is also very accurate device. It can give you accurate output provided you give correct input data and set of instructions to the computer.

3. Reliability:-

The modern computer can perform very complicated calculations without creating any problem. The results produced by computer are consistent (reliable).

4. Automation:-

A computer can automatically perform operations without any need for manual interference during the operations. It controls different devices attached to it.

5. Storage:-

The computer has internal storage (primary memory) as well as external or secondary storage. In secondary storage, you can store a large amount of data and programs (set of instructions) for future use.

6. Versatility:-

Through modern computer you can perform different kind of tasks one by one or simultaneously. It is the most important feature of computer. At one moment you could be playing game on computer as well as downloading songs from internet, the next moment you could be composing a letter and sending emails etc.

7. Communications:-

Today computer is mostly used to exchange messages or data through computer networks all over the world. For example, you can receive or send the information through the internet with the help of computer. It is most important feature of the modern information technology.

8. Precision and Consistency:-

Computers are not only fast and consistent but they also perform operations very accurately and precisely. For example, in complex calculations involving fractional values (where value with decimal point can change the actual result), the computer is very precise with the result.

INFORMATION TECHNOLOGY APPLICATIONS

Computers have a wide range of use in almost every field of our life. They are specially used in the following fields:

a) Office Use
b) Data analysis
c) Accounting and investment analysis.
d) Graphics and Animation
e) Education
f) Banks
g) Airlines and Railway Ticket Reservation
g) E-mailing

OFFICE USES

The work done in offices is mostly the preparation of letters, reports, memoranda, copy of advertisement, publicity, minutes, contracts, forms, notes etc. which can be done through computer in most efficient manner.

Data Analysis

You can analyses the data through special software called spreadsheet programs. You can also prepare the product sales, profits and investment reports. You can also sort, merge and manipulate data (as needed) by accepting the data from other files.

Accounting and Investment Analysis

A spreadsheet program is a software package through which you can analyses investment, inventory control, preparation of budget etc. Specialized software packages such as Tally are available to handle accounts in medium sized companies. Accounting Programs are used for data entry, billing, inventory control, Sales Analysis. Many companies issue shares, debentures, etc. Software packages for such analysis are available at a small price, like MS-Office Suite supported by Microsoft Corporation.

Computers in Graphics and Animation

Computers can be used to make drawings, graphics and movies. **Corel-DRAW**, **Illustrator**, **Visio 2000** and **Free Lance Plus** for Windows are some such software packages, which can help you in increasing your drawing capability.

Computers in Education

In educational institutions computers are used as teaching aid, research tool and analyzing system. When computer is used as a teaching aid it is referred to as computer-assisted instruction (CAI).

Computers in Banks

Banks use computers to provide online service to customers and to answer customer queries regarding their bank balance etc. To handle cash, banks use cash dispensing machines (Asynchronous Transfer Mode (ATM)). With the use of computers, electronic transfer of funds from one account to another has become possible.

Airlines and Railway Ticket Reservation

Indian Railways have computerized ticket reservation in almost all important railway stations. The computer stores all necessary information required for ticket processing such as train number, stations, distance between stations, number of seats available in each train for each class, train fare etc. The computer can also give information regarding train timings, fares etc. on telephone enquiry.

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E-mail

Electronic mail (E-mail) is a system whereby through computer users can exchange messages, greetings etc. with each other via Internet, at a very cheap rate. E-mail allows you to create, send, receive and store messages. You can send mail to individuals or groups with a single click.

CONCEPT OF A COMPUTER SYSTEM

CENTRAL PROCESSING UNIT (CPU)

The main components of a computer are:

- Central Processing Unit
- Input Devices/media
- Output Devices/media

Some special purpose devices and media are also available.

CPU (Central Processing Unit)

The CPU is also called the brain of the computer. Its basic function is to perform calculations and various logical operations. It consists of three parts: -

1. Control Unit
- It consists of electronic circuits
- It selects, interprets and executes instructions.
-Governs input/output (I/O) operations, data transfer to and from storage and guides the routing of data between storage location and the arithmetic and logic unit.

2. Arithmetic and Logic Unit (ALU)
- Comprises of electronic circuits.
- Performs calculations and comparisons.
- Works at tremendous speed and executes millions of instructions per second (MIPS).

3. Memory or Storage
- Also called internal storage or main memory or random access memory (RAM).
- Consists of very fast memories like magnetic core memory or semiconductor memory.
- Stores program instructions or part of data for immediate need.
- Data is stored in a computer memory in the form of words, bytes and bits.

KEY-BOARD, MOUSE AND VDU

Keyboard
Keyboard is an input device. Computer keyboard is an electromechanical component designed to create special standardized electronic codes when a key is pressed. Keyboards come in a variety of sizes and shapes having a number of features in common:

1. Standard Type Writer keys
2. Function keys
3. Special purpose keys
4. Cursor Movement keys
5. Numeric keys

Mouse
The mouse is also an input device that is much in use nowadays in graphics as well as when working with a GUI (Graphic User Interface).

About the size of an audiocassette, it slides on a rubber ball and has two or more buttons on the top. When a mouse is slid across a flat surface, the screen cursor also moves in the direction of the movement of the mouse. With a click of the button, the system can be notified of the selected position.

VDU
Visual Display Unit is the most popular I/O device used nowadays for interactive processing. A keyboard is used to enter data into a processor and a Video Display Unit, called Monitor, is used to display the keyed data and to receive processed information and messages from the computer.
Visual Display Unit/Terminal

VDTs are classified as:

1. Dumb terminals:
These are simple devices that immediately transmit each keyed data character to the processor.

2. Intelligent terminals:
These combine VDT hardware with built-in microprocessors. They can process small jobs without the need to interact with the main computer.

OTHER INPUT DEVICES

MICR
Magnetic ink character recognition devices were developed to assist the banking industry. It is used in the processing of cheques.
The most commonly used character set by MICR devices is known as E13B font that consists of numerals 0-9, and 4 special characters.

Scanners
These are basically input devices that are capable of recognizing marks or characters. They are used for direct entry of data into the computer.

Different types of scanners are:

1. OCR:- These are scanner devices that are capable of detecting alphabetic and numeric characters by comparing the shapes with internally stored patterns. These are expensive and are used only for large-volume processing applications e.g. by credit-

card companies

2. OMR:- These scanners are capable of recognizing a pre-specified type of mark made by a pencil. These are normally used for validation of input documents, evaluating answer-sheets in objective-type tests e.g. GRE, GMAT.

3. Bar Code Reader
Data coded in the form of light and dark lines or bars are known as bar codes. Bar codes are used particularly by the retail trade for labeling goods. Bar code reader is a device used for reading bar code data which is performed by laser beam scanner which is linked to a computer.

4. Desk Scanning
The scanning process involves application of the light source to the image. The light is reflected back form the image into the scanner optics where the varying levels of light are interpreted. The image is then reconstructed digitally and displayed on the screen.

Touch Screen
It is a computer screen designed or modified to recognize the location of a touch on its surface. By touching the screen, the user can make a selection or move a cursor. The simplest type of touch screen is made up of a grid of sensing lines, which determine the location of a touch by matching vertical and horizontal contacts.

Light Pen
A light pen is a pointing device. It is used to select a displayed menu option on the CRT. It is a photosensitive pen like device. It is capable of sensing a position on the CRT screen when its tip touches the screen. When its tip is moved over the screen surface, its photocell sensing element detects the light coming from the screen and the corresponding signals are sent to the processor.

OUTPUT DEVICES

Printers

Printers are primary output devices used to prepare permanent documents for human use. Printers are classified as:

1. Impact printers
   i). Letter Quality Printer
   ii). Line Printer
2. Non-Impact printers
   i). Thermal Printers
   ii). Ink Jet printer
   iii). Laser Printer

1. Impact Printers

These operate like a typewriter, pressing a typeface against paper and inked ribbon. e.g. daisy-wheel printer , dot-matrix printer.

i). Letter Quality Printer:

These are also called character printers or serial printers because they print one character at a time. They produce a very high quality print image (one that is very clear and precise) because the entire character is formed with a single impact such as a Daisy Wheel Printer or a Dot Matrix Printer.

a) DMP (Dot Matrix Printer): These are serial printers, i.e., they print one character at a time. Each character is printed as a pattern of dots.

b) Daisy Wheel Printer: These printers have a print wheel with a set of print characters on the outside tips of flat spokes. You can print a specific character through spinning the wheel.

ii). Line printers

These are very high speed printers, which cater to huge volumes of output requirements of large computer organizations. These are known as Line printers because they use impact methods to produce one line at-a-time printed output. e.g. chain printer, band printer, drum printer.

2. Non-Impact Printers

These printers use thermal, electrostatic, chemical and inkjet technologies.

i). Thermal Printers
These printers use heat to produce an image on special paper. The print mechanism, rather like a dot-matrix print head, is designed to heat the surface of chemically treated paper so that a dot is produced based on the reaction of the chemical to the heat. No ribbon or ink is involved. For users who want the highest-quality desktop color printing, thermal printers are the answer.

ii). Ink Jet printer
The ink jet printer ejects a steady stream of ink drop towards the printed page. The drops are selectively discarded by electrostatic attraction to leave only those that are needed to form the desired symbol. Those that are not needed are captured in a tiny gutter & filtered to remove impurities. They are then recirculated through the drop-generating mechanism.

iii). Laser Printer
This printer is much less mechanical than impact printer (that is, no print heads move, no print hammers hit). Resulting in much higher speeds and quieter operation. The process resembles the operation of a photocopy machine.

The major advantages of laser printers are:
1. Very high speed.
2. Low noise level.
3. Low maintenance requirements.
4. Very high image quality.
5. Excellent graphics capabilities.

Display Devices
This is one of the most important Peripheral devices in the computer system. The following different kinds of display devices are available:

1. Liquid crystal Display (LCD):
Earlier LCD's were used commonly in watches and clocks. But nowadays LCD is applied to display devices of a computer. The major advantage of LCD is the low energy consumption. They also have color capability but the image quality is relatively poor.

2. Projection Displays

A large screen upon which images are projected replaces a personal size of the previous displays. These systems can be connected to computer and whatever appears on the computer terminal gets enlarged and projected on a large screen. Another method is to connect a computer to an LCD Flat screen and to project the LCD Image using Overhead projector. These are popularly used for seminars, classroom lectures and presentations etc.

COMPUTER MEMORY

1. Memory Location

- Memory of the computer is divided into small parts called locations.
- Each location has a unique address.
- Location is further subdivided into bits.
- Different computers have a different location size varying from 8 to 64 bits.

2. Bit

Bit stands for one binary digit, which is either 0 or 1.

3. Byte

Number of consecutive bits combines to make a byte.

Most commonly used combination is of 8 bits. Size of main memory is given in Kilobytes (KB) or Megabytes (MB).

Primary Storage / Internal Memory / Main Memory

The main memory, also called random access memory (RAM) is the work area of the computer. It stores program instructions or part of data for immediate needs. The storage capacity of RAM is limited. A typical modern computer can have a RAM size of 32MB or 64MB or greater up to 8GB.

It is volatile memory of the computer and when the power goes, the contents stored in RAM are lost.

RAM can be classified as DRAM (Dynamic RAM) or SRAM(Static RAM).

Secondary Storage

The secondary storage devices are used to store programs and data on a permanent basis. Their storage capacity is much higher compared to main memory of the computer. Secondary Storage devices accept data or program instructions from the processor retain them and then write them back to the processor as and when needed.

The examples of secondary storage devices are Floppy disk, Hard Disk, Magnetic tapes, Pen-drives or jump drives etc.

Floppy Diskette

The floppy diskette is a direct access storage device although its capacity is much less than a hard disk. The diskette is made out of a flexible plastic material. This base is coated with an iron-oxide recording material. Data is recorded as tiny magnetic spots. The surface is divided into tracks and sectors, same as in a hard disk. The number of tracks on a diskette depends on the recording density.

The size of each sector is fixed (512 bytes). Data is stored on both sides of the diskette. There is one head per surface in the floppy drive for reading/writing data on the diskette. The circular plastic disk is enclosed within a smoothly lined, protective square jacket to protect it from dust and scratches.
The standard size available nowadays is: 3.5 inch.

Hard Disk

These are specific kind of storage devices that can not be removed and are fixed inside the computer. That is why these are also called as fixed disks and store programs permanently. The storage capacities of the disks that are used these days are having Gigabytes of storage and these are faster in comparison to Floppy disks.

Magnetic Tape

This is also a magnetic media which stores data sequentially in them. Though they provide unlimited storage capacity they suffer form a very serious problem. Since the data stored in them is sequential in nature, retrieval of data takes a very long time. These are used for archival backup storage.

CD-ROM

Compact disk, read-only memory optical disks have a very large storage density and the access time is relatively low.

Digital Versatile Disc

Digital Versatile Disk is in genre of optical discs with same overall dimension of CDs but much higher capacity. These can store at least 7 times more data than CD ROM.

Static Memory and Memory Sticks

Also commonly known as pen drive or jump drive or flash drives. Static memory devices use memory chips to store information. This information is retained even after power is turned off.

They connect to a USB port on the computer and offer capacities of 128 MB or more. Due to their size and shape, these devices are known as USB memory keys or flash drives and have widely replaced floppy disks for transportation of files between systems. Many portable and hand-held devices rely entirely on static memory for storage.

Semiconductor Memory

These days, internal memory consists of extremely small bit storage circuits (flip-flops) etched on a silicon chip. All the electronic elements to store a bit are placed in such a small area of the chip that a single chip can store millions of bits. The individual chips are arranged in groups to form a memory module.

Types of Semiconductor Memory

i). Random Access Memory (RAM): Any information can be read from and written into a RAM. It is a read/write memory. It is a volatile memory
i.e. its contents are lost if the power supply is interrupted or turned off. The main memory of the computer is RAM.

ii). Read Only Memory (ROM): ROM is permanently programmed with information during manufacture, by implementing the appropriate pattern of two state values. It cannot be changed subsequently by a normal write operation. It is thus completely non-volatile. It is mainly used to hold those programs, which are required permanently.

iii). Programmable Read Only Memory (PROM) : This can be programmed to record information using a special electronic equipment known as a PROM programmer. However, it cannot be changed subsequently.

iv). Erasable Programmable Read Only Memory (EPROM): EPROM is a PROM, which can be reversed by exposing it to an ultraviolet light source. The device can be re-erased and re-programmed again and again.

v). Cache Memory: It is a small capacity high-speed memory used to make processing faster. The main memory can process information very fast, but it takes much longer

to transfer data to and from the input/output devices. The cache memory compensates for this mismatch in operating speeds. It holds those parts of data and the active program, which are most frequently used. Thus, the performance rate of the CPU improves.

CONCEPT OF HARDWARE AND SOFTWARE

HARDWARE

Hardware refers to the physical components of a data processing system. Input, storage, processing and control devices are hardware such as Hard disk, Printer, Keyboard etc. Without any hardware your computer would not exist and software would have nothing to run on. Computer software is something that executes within the hardware.
The hardware of a computer is infrequently changed, in comparison with software and data. Hardware professionals deal with the manufacturing and maintenance of computers.

Many manufacturers mass produce computer systems and sell them either through direct marketing or retail chains.
There are also a number of vendors that can custom assemble computer systems to the end-user's specifications. It is also possible to purchase the individual parts and component of a computer and build it.

Some of the items to consider when purchasing a computer include:

> The motherboard
> Processor
> RAM
> Storage
> Adapter cards
> power options

SOFTWARE

A computer can only do what a programmer asks it to do. To perform a particular task the programmer writes a sequence of instructions, called the program. An instruction is a command given to the computer to perform a certain specified operation on the

given data. A set of programs written for a computer is called software. Without software, hardware is of no use. It cannot produce any results on its own.

It is a general term used to describe a collection of computer programs, procedures and documentation that perform some task on a computer system.

Usually written in high-level programming languages software are easier and more efficient for humans to use (closer to natural language) than machine language. High-level languages are compiled or interpreted into machine language object code. Software engineers (programmers, systems analysts) develop and maintain software. With technological changes, software changes take place faster than hardware changes.

Practical computer systems divide software systems into two major classes:

1. Application Software.
2. System software,

Application Software

Software that allows you to do things like create text documents, play games, listen to music, or surf the web is called application software. In general, application programs are software that enable the end-user to perform specific, productive tasks, such as word processing or image manipulation

Systems Software

Systems software comprises of an Operating System and all utility programs (like Compiler, Loader, Linker, and Debugger) that manage computer resources at a low level. Operating systems, such as GNU, Microsoft Windows, Mac OS X or Linux, are prominent examples of system software.
System software is software that basically allows the parts of a computer to work together. Without the system software the computer cannot operate as a single unit. System software performs tasks like transferring data from memory to disk, or rendering text onto a display device.

Some examples of popular high-level programming languages are given below:

FORTRAN

It is an abbreviation for Formula Translation. IBM introduced FORTRAN in 1957. It is a very useful language for scientific and engineering computations as it contains many functions for performing complex mathematical operations.

COBOL

It is an abbreviation for Common Business Oriented Language. COBOL was developed specially for business data processing. It was introduced by the US industry/government committee in 1960 and is used for large business and commercial applications such as handling of ledgers, accounts and payroll files etc.

PASCAL

It is a high-level language named in honor of Blaze Pascal, a seventeenth century French mathematician, philosopher and inventor. It is a multi-purpose language suitable for both scientific and business applications. Besides numbers, it can also manipulate vectors, matrices and strings of characters, sets, records, files and lists.

BASIC

It is an abbreviation for Beginners All-purpose Symbolic Instruction Code. It was introduced in 1965 by Dartmouth College. BASIC is a widely used language for simple computations and analysis.

ALGOL

It is an abbreviation for Algorithmic Language. An international committee introduced it in 1958. It is suitable for scientific and engineering computations. It is used in some universities and computer centers, but not in industries.

C

It is a general-purpose high-level language. A group at Bell Telephone Laboratories, USA in the early 1970s, designed this language. It has features similar to PASCAL. It permits manipulation of internal processor registers and hence a programmer can write low-level machine instructions.

LOGO

It is an abbreviation for Logic Oriented Graphic Oriented. Seymour Papert and his colleagues at MIT developed it in the late 1960s. It is used in serious scientific work in universities. It has also been popularized as a first educational language that children can use to achieve intellectual growth and problem-solving skills.

LISP

It stands for List Processing. McCarthy developed this language in the early 1960s. LISP is suitable for nonnumeric operations involving logical operations. It is used extensively in artificial intelligence and pattern recognition. It is also used in designing computer games, proving theorems etc.

JAVA

Java was introduced by Sun Microsystems in 1995. Java is a programming language designed for use in the distributed environment of the Internet. It was designed to have the "look and feel" of the C++ language, but it is simpler to use than C++ and enforces an object-oriented programming model.

REPRESENTATION OF DATA INFORMATION

Information

In general, raw data that has been verified to be accurate and timely, is specific and organized for a purpose, is presented within a context that gives it meaning and relevance, and which leads to increase in understanding and decrease in uncertainty.

Data

- Collection of facts
- Raw Information

Processing

Sequence of actions required to be performed on data to convert it into results. For example, a merit list is generated after processing the raw information available about the marks of each student.

Results

- Useful Information
- Facts in organized manner

CONCEPT OF DATA PROCESSING

The computer is an electronic data processing device which is capable of taking input, processing it to generate useful information (output) and store both input as well as the output. The data processing cycle comprises of following 4 distinct stages viz.:-

1. Input: Data is collected and entered into the computer. This is called input process.

2. Storage: What is entered into the computer is stored in its main memory. This storage is temporary i.e. the contents of the memory are lost when the power is switched off. Another memory, called secondary memory, is used to store the information of the main memory permanently.

3. Processing: The sequence of actions that are performed on the data stored in the main memory, to get results is called processing. Results are stored in the main memory till they are transferred to an output device.

4. Output: Stored results are taken out of the main memory. This process is known as output process.

OPERATING SYSTEM

INTRODUCTION

In the previous chapter, you have learnt about the characteristics of a Computer System and its components. You have also learnt about System Software and Application Software.
In the current chapter, you will learn about a very important System Software viz. Operating System. We will use Windows to explain various aspects of an operating system. Microsoft has produced a number of operating systems. Windows 95/98/ME/XP/Vista, Windows NT, Windows 2000/2003 are some of them.
We have selected Windows XP Professional for reference.

BASICS OF OPERATING SYSTEM

OPERATING SYSTEM

An Operating System is a program that acts as an intermediary between the user of a computer and computer hardware. The purpose of an operating system is to provide an environment in which user can execute programs in a convenient and efficient manner. It is the first program loaded into the computer's memory after the computer is switched on. Popular operating systems include MS-DOS, OS/2, Windows and UNIX.

The operating system is an important component of the computer system, because it sets the standards for the application programs that run on it. All programs must be written to talk to the operating system.
Various functions of Operating System:

- Memory Management
- Processor Management
- Device Management
- File Management

i) Memory Management Functions
Operating System manages the primary memory of the system. It allocates the memory, on the request of a process, which is being run at that time. It also keeps a check that at a particular time, how many bytes of memory are in use and which process is using it. It also keeps track of what part of it is free. In cases of a multi-user system, it decides on priority basics, which user will have access to memory and when. How much of it is used depends on the requirements.

ii) Processor Management Functions
Operating System also takes care of the processor. It allocates the processor to the user. In case of multi-user system, it allocates the processor time to different users as and when needed and in such a way that every user has a minimum waiting time.

iii) Device Management Functions
It keeps track of all the devices i.e. peripherals attached to the computer such as I/O devices etc. When needed, it allocates the devices in such a way that each can be efficiently used. It initiates the I/O operations and allocates them along with other devices to the user.

iv) File Management Functions
Writing and retrieving the information on/from the secondary storage device is the function of an Operating System. It follows a complete methodology for maintaining the files, so that different sets of information do not get mixed up and exactly the same set of information is supplied, which is required by the user.

Types of Operating Systems

i) Single user Operating Systems
These Operating Systems allow only one user to work on a computer at a time.
Example: MS-DOS, CP/M.

ii) Multi user Operating System
These Operating Systems allow more than one user to work on the computer at the same time. These operating systems allocate memory in such a way that different users can work simultaneously without disturbing each other. They also allocate the processing time in such a way that every user gets a very quick response from the machine. These are also known as Time Sharing Operating Systems
Example: LINUX, UNIX, XENIX, VMS, Windows NT.

BASICS OF POPULER OPERATING SYSTEM (LINUX, WINDOWS)
Windows and Linux both have a user friendly Graphical User Interface (GUI). GUI includes such things as: windows pull-down menus, buttons, scroll bars, iconic images, and wizards. They allow users to interact with the programs without having to type the commands from the keyboard. Users can use pointing devices like mouse to perform specific tasks on computer.

i) LINUX
Linux is a multitasking, multi-user operating system, which means that many people can run many different applications on one computer at the same time.
Linux is a generic term referring to Unix-like computer operating systems based on the Linux kernel. Their development is one of the most prominent examples of free and open source software collaboration, typically all the underlying source code can be used, freely modified, and redistributed both commercially and non-commercially.

Linux is predominantly known for its use in servers, although it can be installed on a wide variety of computer hardware. Linux distributions, installed on both desktop and laptop computers, have become increasingly commonplace in recent years.
The name "Linux" comes from the Linux kernel, originally written in 1991 by Lines Thorvaldsen.

i) Microsoft Windows

Windows operating system is GUI based and can be used on desktop computers. Its interface has following
Properties:

Title Bar: The title bar contains the name of the program you are working with and in some cases the name of the opened document also appears. In the top right corner we can find the Minimize, Maximize/Restore, and Close buttons.

Menu Bar: The menu bar has the program functions organized in menus. For example, when we click on File, the different operations that can be performed with files are displayed. All the operations that the program allows us to do are located within the different menus.

Tool Bar: The tool bar contains icons to immediately execute some of the most often used commands.

Scroll Bars: The scroll bars allow us to move through out the page in a quick and simple manner. Simply drag the bar with the mouse or click on the arrows. There are bars to move along the width of the page and bars to move along the height of the page. The little square with dots on the right is used to change the size of the window. Simply click and drag.

Status Bar: The status bar is used to give user certain information pertaining to the current program. The information displayed on it varies depending on the program window which is opened at that time.

Desktop: The Desktop is the on-screen work area on which windows appear. it is the first screen that appears when the operating system has initialized. In our case it will be the Windows XP desktop.

THE USER INTERFACE

TASK-BAR

he taskbar is the long horizontal bar at the bottom of your screen. Unlike the desktop, which can get obscured by the windows on top of it, the taskbar is visible almost all the time. It has four main sections:

- **Start button:** It is used to open the Start menu.
- **Quick Launch Toolbar:** It lets you start programs with one click.
- **The middle section:** It shows you which programs and documents you have opened and allows you to quickly
  Switch between them.
- **The notification area:** It includes a clock and icons (small pictures) that communicate the status of certain
  programs and computer settings.

I-CONS

A computer icon is a graphical symbol that represents a property, function, or entity. In computer applications, icons are used to quickly execute commands or open programs and documents. You access the functionality behind an icon by clicking or double-clicking it. Operating systems often allow you to customize visuals of various objects by applying your own custom icons.

You may obtain icons from various sources (for example from our icon library) or you can build your own.

START MENU

Start Menu is located at the leftmost corner of the status bar. Using mouse, left click on the start menu which displays various options available. The start menu shows various options on it like Programs, Internet Explorer and Shut down etc. These can be activated using a double click on these icons. For **Menu Selection**, you have to move to the desired option first and then Double click it to open the respective program. To shut down the system you can click on the Shut Down/turn off computer option that appears at the bottom of the Start Menu. Another option available along with Shut Down is Logoff.

RUNNING AN APPLICATION

To run any program/application, follow the given steps:

1. Click Start, and then click Run.

2. In the dialog box that appears, type the path to the item you want to open in the space provided after **Open**:
or click Browse to locate it.

The Open box lists items you have opened recently. Type or select an item in the list.

3. Click OK to open it.

You can open a file or folder or connect to a shared computer by typing its path in the Open box.

You can also connect to an Internet or intranet site; for example, to reach the Microsoft Web site, type

www.microsoft.com in the Open box.

You can connect to a remote computer using the open box.

OPERATING SYSTEM SIMPLE SETTING

Control Panel is full of specialized tools that are used to change the way Windows look and behave. Some of these tools help you adjust settings that make your computer more fun to use.

For example, use **Mouse** to replace standard mouse pointers with animated icons that move on your screen, or use **Sounds and Audio Devices** to replace standard system sounds with sounds you choose. Other tools help you set up Windows so that your computer is easier to use. For example, if you are left-handed, you can use Mouse to switch the mouse buttons so that the button on the right performs the primary functions of selecting and dragging.

To open Control Panel, click Start and then click Control Panel.

When you first open Control Panel, you will see some of the most commonly used control panel items organized by category. To find out more information about an item in control panel while in Category view, hold your mouse pointer over the icon or category name and read the text that appears. To open one of these items, click its icon or category name. Some of these items will open to a list of tasks you can perform, as well as a selection of individual control panel items.

CHANGING SYSTEM DATE AND TIME

To change the date and time, Date and Time icon/option of control panel can be used. To do so, follow the given steps:

1. Open Control Panel
2. Open Date and Time in Control Panel.
3. On the Date & Time tab, select the item you want to change. It shows the Calendar of Current Month and Year.
4. To change the month, click the arrow in the month list, and then click the correct month.
5. To change the year, click the arrows in the year list.
6. To change the day, click the correct day on the calendar.
7. To change the time , click the time part and type the appropriate time there.
8. Click OK to confirm changes.

CHANGING DISPLAY PROPERTIES

Using the Display icon available on Control Panel, you can modify the way desktop objects such as windows, menus, fonts, and icons appear on your screen.

To adjust display and appearance options through the Display icon in Control Panel, follow the given steps :-

1. On the Start menu, select Control Panel
2. In Control Panel, be sure you are in Classic View (i.e. all Control Panel icons are showing). If not, under Control
   Panel in the left pane, select Switch to Classic View.
3. Select Display icon from Control Panel.
4. In the Display Properties dialog box, select the Appearance tab.
   - Select a Windows and buttons style from the list.
   - Select a Color scheme from the list.
   - Select a Font size from the list.
5. When you are finished with selections, select OK twice to close the dialog boxes..
6. To close Control Panel, select the Close button.

INTRODUCTION of MS Word:-

The process of preparing and printing documents by using the computer and computer programs is called Word Processing. The computer programs that are used for this purpose are called the Word Processing Software or Packages.

Word Processing Software is used to create letters, memos, faxes and various other types of documents. The Word Processing Software has the following important features:

1. Creating new documents with different formatting.
2. Save the document on disk for future use.
3. Preview the document on the monitor before getting its hardcopy on paper.
4. Open the existing documents for editing.
5. Set the margins of document and line spacing.
6. Copying, moving, selecting, deleting, inserting etc. operations on text in the document.
7. Underline text, bold face text, setting size of text etc.
8. Images can be inserted into the document.
9. Cut or copy the selected text from the document and paste it anywhere in the same or another document.

Advantages of Word Processing

One of the main advantages of a word processor over a conventional typewriter is that a word processor enables you to make changes to a document without retyping the entire document.

Some Common Word Processing Packages

Some examples of popular word processing software are

> Open Office.
> WordStar.
> Word Perfect.
> Microsoft Word.

WORD PROCESSING BASIC

OPENNING A WORD PROCESSING PACKAGE

Opening MS-WORD

You can open Microsoft Word by clicking Microsoft WORD shortcut from popup menu under Programs menu. The steps are:

Start Button --> All Programs --> Microsoft WORD 2003 icon.

Understanding The Word For Windows Screen

When you start Word, the screen contains the Title Bar, Menu Bar, the Standard Toolbar, the Formatting Toolbar, and the Ruler at the top of the screen.

The Title Bar will display the name of your document.

The Menu Bar displays the menus from which you select the commands to work with your documents.

The Standard Toolbar contains buttons for performing common word processing functions with a click of the mouse.

The Formatting Toolbar contains buttons/tools and drop down lists for formatting your document.

The Ruler is used to set tabs, indent paragraphs, and change the page margins.

At the bottom of the screen is the Status Bar. The Status Bar is divided into several sections.

The area between the Ruler and Status Bar is the Text Window. The text window is where your document appears as you type.

The small horizontal line in the window is called the end mark. The end mark indicates the end of your document. It moves down as you insert text and moves up as you delete text.

The blinking vertical line is called the insertion point. The insertion point is the Windows equivalent to a cursor, since it indicates the position of the next characters typed or deleted. You can use either the mouse or the directional arrow keys to move the insertion point to the place where you want to type, insert, or delete characters.

THE MENU BAR

Selecting a Menu Bar option with the mouse or keyboard displays a pull down menu. A pull down menu lists specific operations that you can perform. The figure for instance, shows the pull down menu for the File option.

In some pull down menus, certain options may appear gray, or dimmed. These options are not currently available to be selected but must first be activated by performing some other function. If the function has an alternate shortcut key, it will be listed next to the command, such as Ctrl+S next to the menu option Save.

An ellipsis (...) next to the command means that selecting the option will display a dialog box containing additional choices from which you must select. A checkmark indicates that the option is turned on or selected.

To display other pull down menus, click on appropriate Menu Bar options, or press the right arrow (-->) key to move to next menu or press the left arrow key to move to previous menu.

To select a pull down menu option, click on the option with the mouse button, or press the underlined letter, or press the up arrow key or down arrow key to highlight the option and press Enter. To cancel a menu, click elsewhere on the Window or press the Esc key.

The File menu shows New, Open, Close, Save, Save As, Print and other basic file functions.

The Edit menu shows Cut, Copy, Paste, Paste Special, Find, Replace, etc. to edit text

The Insert menu is used to insert a Picture, Date, Time and much more.

The View menu is used to activate/deactivate Toolbars, to add/remove Header, Footer etc.

The Format menu shows formatting options for the text.

The Tools menu shows options for checking the spellings & grammar of the document, AutoCorrect etc.

The Help menu shows various options for help on MS-Word

USING THE HELP

Word has a powerful onscreen Help system. It includes information on menu commands, dialog boxes, and other tools. There are even demonstrations that take you step by step through complete word processing tasks.

Getting help from Word

When you have a question about a Microsoft Office program, you can ask the Office Assistant. For example, to get Help about drawing objects or pictures, type picture in the Assistant.

If the correct topic doesn't appear in the Assistant balloon, click None of the above, look for more help on the Web at the bottom of the list of topics.

You will get suggestions on how to phrase a question to the Office Assistant or how to narrow your search by using keywords. If you still can't find the information you want, you can send feedback to improve future versions of Help and be automatically connected to the Microsoft Office Update Web site to search for help there.

The Assistant automatically provides Help topics and tips on tasks you perform as you work, before you even ask a question. For example, when you write a letter, the Assistant automatically displays topics to help you create and format a letter.

STEPS TO GET HELP:

1. Click at help option from the menu bar.

2. Office Assistant will appear with a dialog box.

3. Type the specific question or the topic name.

4. Then click on search button.

5. Other options relating to the topic will be displayed in the Office Assistant box.

6. Choose the appropriate option for which you want the detailed help.

7. Then the help topics related to the options will appear in a separate window.

8. Select the specific topic from the list.

9. Detailed help regarding the topic will be displayed.

USING THE I-CON BELOW THE MENU BAR

New Blank Document: You can use this icon to open a blank new document.

Open: Open an existing document stored in the hard disk or from the specific source.

Save: Save the document in the hard disk.

E-Mail: You can directly open the Microsoft Outlook and E-mail the document.

Printer: You can directly print the complete document by pressing this icon.

Print Preview: Before giving the printing of the document you can have a peep into the final appearance of the document on the paper.

Copy: By pressing this button you can copy any text object or shape or picture that you want to be put somewhere else.

Paste: By pressing this button you can paste any text object or shape or picture that you want to be put on the document.

Undo: By pressing this button you can undo the immediate previous action that you have performed.

Insert Table: You can insert a table in your document to present tabulated information in the shape of rows and columns.

Zoom: You can use this button for increasing or decreasing the size of your document as it is displayed in the window.

Microsoft Word Help: Use this icon to activate the inbuilt Microsoft Help System.

Add hyperlink: For adding a Hyperlink in your existing Document.

Style: You can select the style of the document that you are typing.
Font type Button: For changing the font of the typed text you can use this button. On pressing this button a dropdown list opens and you can select the specific font for the typed text.

Font Size: You can change the font size of the text by pressing this button and selecting the specific font size value.

Bold: You can darken a part of the text so as to make it more prominent/bolder in the document by pressing this button.

Italic: You can provide an italic effect to your text when you press this button.

Align Left: This button provides the alignment feature to the text and you can use this to set alignment of your text to the left hand side.

Align Center: This button provides the alignment feature to the text and you can use this to set alignment of your text in the center of the page.

Align Right: This button provides the alignment feature to the text and you can use this to set alignment of your text to the right hand side.

Justify: On pressing this button your text document will automatically be aligned to both the left and the right sides. MS-Word automatically pads in soft spaces to bring about text justification.

Numbering of text: If numbering is required that must appear along with the text then on pressing this button you can make that happen.

Bullets: If bullets are required of specific shape and size to identify a specific text you can press this button to achieve the desired result.

Decrease Indent: The Decrease indent button can be used to decrease the indent of selected items to the left by one tab-stop.

Increase Indent: This button can be used to increase the indent of selected items to the right by one tab-stop.

Outside Border: You can add, remove border around the selected text, paragraphs, cells, pictures or other objects.

Font Color: By clicking this button you can provide a specific color to the text in the document that you want to color.

More Buttons: By pressing this button another dialog box opens that is titled add or remove Buttons. Further pressing this button would provide you with the number of buttons that already have been selected and are appearing in the menu bar and there would be some unselected buttons that are not appearing in the menu bar you can make requisite changes as per your need.

OPENNING DOCUMENTS

A. Opening a document on your hard disk

To open a document, follow the given steps:-

1. Click Open option available in the File menu.
2. If you want to open a document that was saved in a different folder, locate and open the folder.
3. Double-click the document you want to open.

B. Opening a document created in another program

To open a document of a different type, follow the given steps:-

1. Click Open option available in the File menu.
2. Click the file format you want in the Files Type box.
3. You can also type the extension in the File name box for example, type *.doc to find MS-WORD files.
4. If you want to open a document that was saved in a different folder, locate and open the folder.
5. Click the document you want to open in Word.

6. Click Open option in the open dialog box

C. **Opening a Recently Used Document**

You can edit new documents as you type them or existing documents you've already saved. To edit an existing document, you must first open it, or recall it from the disk. Word makes it easy to open the last four documents you opened or created and saved. To open a recently used document, follow the given steps :-

1. Select File Menu. At the bottom of the File menu, Word lists the last four documents you worked on as shown in Figure. If the document is not in the current directory, the complete path will be shown with the file name.
2. Click on the name of the file you want to open, or press the number next to the filename.

D. **Closing a Document**

To close a document follow the given steps:-

1. Click on the File menu from menu bar.
2. Then click on the Close option in the file menu to close the document.

It will remove the document from the document window. If the document was changed after last save, it will prompt to save the changes.

E. **Quitting Word**

When you have finished using Word, you will like to exit the MS-Word application and return to the Desktop. You can save a document and exit Word using a single dialog box.

To exit Word

1. Select the File Menu.
2. Then click on the Exit option (present as the last option) in the file menu.

SAVE AND SAVE-AS OPTION

A. Save a document with Save Button

To quickly save a document, click save button on the Standard toolbar. To save a document in a different location or with a different name use the Save As option instead.

B. Save a document with save option in File Menu.

When you save a document for the first time, you must give it a name. Document names can be up to 255 characters long. It can contain uppercase and lowercase Letters spaces but cannot contain punctuation other than underscores. Filenames are not case sensitive.

C. **To save your document for the first time**

1. Select File --> Save As or File --> Save (Ctrl+S) to display the Save As dialog box as shown in Figure .
2. Type a document name. When Word saves a document, it automatically adds the extension .DOC. If you want to
   Save the file in another directory or another drive type the complete path along with filename yourself or open the desired drive and/or folder by double clicking it.
3. Select OK. The document's name will appear in the Title Bar.

D. **Save a copy of a document with Save as Option**

1. Open the document you want to make a copy of.
2. On the File menu, click Save As.
3. If you want to save the document in a different folder, locate and open the folder.
4. In the File name box, type a new name for the document.
5. Click Save.

PAGE SETUP

The margins and the printed text's position on the page can make or spoil the looks of your entire document.
That's why you should pay a considerable amount of attention to these things.
Microsoft Word places all the page setup controls in one convenient place in the Page Setup dialog box, where you can make all your changes.

Steps to open Page Setup Option:

From the File menu select Page Set up and then double click with your mouse on options like Margins, Paper Size, and Paper Layout etc. to open relevant options and make changes to them.

Orientation Setting

Paper orientation can be set to Horizontal or Landscape. The option for the same is available under Paper Size tab of the Page Set up Dialog Box.

The default page orientation in Word is Portrait mode. Portrait mode means the page is longer than it is wide.
When you are working with charts, you may want to turn the page so the horizontal edge is longer than the vertical edge. Then for this you can use the Landscape mode.

Changing the Margins in Word

When the Page Setup dialog box appears, click on the Margins Tab to change the margins. Word presents you with numerous options for the same.

In the Top, Bottom, Left, and Right selection boxes under the Margins section, highlight the entry you would like to change.

Enter a new number (you do not need to include the") for the distance in inches you want the text to be, from the
Respective edges of the document page. You can also use the arrows to increase or decrease the margins in increments predefined by Word.

The Page Setup box also gives you the option of changing the gutter (Binding Space left on the Left Hand Side of a document in addition to Left Margin).

Note: When setting your margins, please note that most printers require about a half inch margin all the way around the page to print correctly; if you specify margins outside the printable area of the page, you will receive a warning message when you attempt to print the document.

PRINT PREVIEW

Previewing a Document before Printing
Print Preview displays one or more entire pages at one time. You can adjust the left and right margins, and move text ups or down on the page. Use print preview to make minor changes to the overall page layout.
To Print Preview:

1. Select File option from the file Menu --> then click the Print Preview option. The figure shows a document in
Print Preview display.

2. The mouse pointer will appear as a small magnifying lens. To quickly enlarge a portion of the page, click on the
Text you want to enlarge.

3. Select Close to return to the previous view.

PRINT OF DOCUMENT

Word has many powerful printing features. You can print just the page you are working on, a bit of selected text, a series of selected pages, or the whole document. You can print just the odd or even pages, or print the document to a file on disk, or you can print multiple copies. To print a document you can use Standard Toolbar or the File Menu.

Method 1 : Standard Toolbar

If you want a quick copy of your document, the process is easy. Just click the Print Button on the Standard Toolbar; it will print the current page.

Method 2 : File Menu

1. Make sure your printer is turned on and is ready for use.
2. Select File --> Print (or press Ctrl+P) to display the Print dialog box.
3. Select OK.

By default when we give print command, it prints current page. We can make any page as current by clicking on it

Print Selected Page or a selected range of pages
In order to print a range of pages you can follow the steps given below:

1. On the File menu, click Print.

2. Under Page range, specify the range of the document you want to print.
If you click Pages, you must also enter the page numbers or page ranges you want to include, or both.

Print a portion of the document

1. Select the portion of the document you want to print.

2. Click Print on the File menu, and then click Selection.

Print more than one copy at a time

For printing more than one copy at a time you can follow the steps given below:
1. On the File menu, click-->Print.

2. In the Number of copies box, enter the number of copies you want to print.

DOCUMENT CREATION

Having learnt about the Word interface in the previous sections, it's time to get to work. In this chapter, you'll learn how to create a document first. As you've already seen, Word opens with a blank document already displayed, ready for editing. At this point, you have several choices:

You can start working in the blank document that's already open, entering text and other elements. When you have finished entering and editing the text, you can save the file.

You can start with one of Word's built-in templates, which may already contain some of the text and much of the formatting you need.

Any time you want to create a new blank document, the quickest ways to do it are to click the New button on the Standard toolbar or to use the keyboard shortcut Ctrl+N.

These commands create a blank document based on Word's default Normal template. If you use File, New instead, you can choose to create a document based on a different template.

Technical cube